

## **Melting Ice**

### **Objective:**

Students will investigate the effect of melting ice on sea level due to global warming by analyzing the data from the class experiment.

**Aim:** How does melting ice affect the sea level?

### **Key Points to Understand**

- Global warming is the rise in average temperature of the Earth.
- As global warming heats up the upper layers of the ocean, it will cause the melting of ice, which floats in the water near the Arctic and Antarctica.
- It is a common misunderstanding that the melting of the polar sea ice will cause the ocean level to rise.

### **Vocabulary**

• **Float:** To rest or remain on the surface of a liquid; buoyant.

**Global Warming:** A rise in the average global temperature.

**Melt:** To become liquid; dissolve.

**Ocean/Sea:** The vast body of salt water that covers almost 3/4 of the Earth's surface.

There are geographical divisions of this body, commonly given as the Atlantic, Pacific, Indian, Arctic, and Antarctic oceans.

**Materials**

Large clear container (such as a clear bucket or plastic bowl)

Water (enough to fill the container 3/4 full)

- Ice cubes (enough to add to water to make container full)
- Measuring tape (with centimeters)

Globe

Student Record Sheet

**Danielson Competencies :**

3b. Using Questioning and Discussion Technique

3c. Engaging Students in learning

**Standards:**

**CCSS.ELA-LITERACY.SL.K.2**

Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

**CCSS.ELA-LITERACY.SL.K.3**

Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

**CCSS.ELA-LITERACY.W.K.2**

Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.

**CCSS.ELA-LITERACY.W.K.6**

With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

**First Grade:**

**CCSS.ELA-LITERACY.W.1.1**

Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.

CCSS.ELA-LITERACY.W.1.7

Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

CCSS.ELA-LITERACY.SL.1.1

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

**First Grade:**

Science:

1.1a Animals need air, water, and food in order to live and thrive.

1.1b Plants require air,water,nutrients,and light in order to live and thrive.

**Math:**

**First Grade**

CCSS.MATH.CONTENT.1.MD.C.4

Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

**Preparation:**

Before the lesson, gather materials and place them on a table in front of the class. Fill the large clear container 3/4 of the way full with water. Set ice cubes beside the container.

Students may need to fill in Student Record Sheets, as directed by the teacher. How to use Sheet will be modeled under a document camera.

**Procedure:**

1. Before beginning the experiment, ask students the following questions and have a class discussion.

*What is global warming? How would global warming affect our lives where we live?*

*What is floating ice? Where might you find floating ice? (Melting icebergs near the Arctic and Antarctica). Bring out a globe and show students what the white land masses represent (glaciers) on the North and South Poles.*

*What do you think happens when floating ice melts into the sea/ocean? Will this affect the level of sea water?*

2.Tell students that many people are concerned that as global warming will cause the melting of the large amount of ice (polar ice caps) that floats in the water near the Arctic and Antarctica. People think that with the melting of these icebergs even more water will enter the oceans and cause an additional rise in sea level. Students will have an opportunity to test this idea today.

### ***When Floating Ice Melts in the Sea***

Students will place the ice cubes in the container full of water.

Gently fill the container with water until it is almost overflowing.

Students will measure the height of the water level. Have students record the water level on their Student Record Sheets.

Students will observe and record the water level twice as the ice melts.

Students will measure the water level after the ice has melted (later in the day or the following day).

Students will record their findings on their record sheets.

Students will turn and talk with a partner about their noticings or findings.

### ***Ask students:***

Does the water overflow when ice melts?

Do you think that melting icebergs will could make the sea level rise?

Why do you think it could could cause a rise?

What you think will happen if the water rise?

How could animals be affected by melting ice?

**Assessments:**

**Pre-assessment:**

Whole group discussion on what happens to melting ice.

**Formative assessment:**

The teacher will assess students learning through how well they are able to answer questioning. (whole and small group conversations)

**Summative assessment:**

Students will be assessed on whether they were able to use and apply what they gathered on their record sheets to form a conclusion.

**Follow-Up Activities**

- Students can make a map of the globe highlighting the areas with icebergs and melting ice.
- Students could collect current newspaper articles related to global warming and the melting of icebergs in the Arctic and Antarctic.
- Students could do a report about an animal living on the polar ice caps that depends on the ice for their habitat.

*Student Recording sheet and Rubric Attached*

Student Name:\_\_\_\_\_

Date:\_\_\_\_\_

Class:

## Ice Melts

**Question:** What do you think happens when floating ice melts into the sea/ocean? Will this affect the level of sea water?

**Hypothesis**

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### Data:Level of Water Over Time

	____ minutes <i>Ice enters container</i>	____ minutes <i>Ice melting</i>	____ minutes <i>Ice melting</i>	____ minutes <i>Ice has melted</i>
Level of Water (Centimeters)				

### Conclusion

Based on what I observed during the experiment, I can conclude...





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# Science Rubric

Statements	Level 1	Level 2	Level 3	Level 4
				
Participates in experiments and activities	Demonstrates minimal participation; much teacher modeling and assistance needed.	Participates in experiments and activities with some teacher modeling and assistance.	Actively participates in science experiments and activities.	Participates in experiments and activities and extends the science concepts independently.
Shows understanding of topic.	Demonstrates a beginning understanding of topic.	Demonstrates some understanding of topic.	Shows understanding of topic.	Extends understanding of Topic's concepts and makes connections independently.
Communicates ideas through writing (pictures, letters, words)	Beginning to communicate ideas using pictures.	Developing the ability to communicate ideas using pictures and letters.	Mastered the ability to communicate ideas using pictures, letters, and words.	Exceeds expectations when communicating ideas using complete sentences.

Rita Barbosa

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Science/ Literacy/Math

**Grade: 1**